

reference. It is noted that in some embodiments, an antenna system 310 may not include a power transfer antenna and instead only include one or more communications antennas, while in other embodiments, an antenna system 310 may not include a communications antenna and instead only include a power transfer antenna.

[0042] Referring back to FIG. 1B, in some implementations, a CE device, such as a second CE device 131 may include two or more antenna systems that allow it to wirelessly and inductively couple with two or more different CE devices. As such, in accordance with some embodiments, wireless power transfer may be daisy chained from first CE device 130, through second CE device 131, to third CE device 132. Similarly, in some implementations, the one or more antenna systems may allow the second CE device to wirelessly daisy chain communications between first CE device 130 and third CE device 132. Further, second CE device 131 typically can independently communicate with the first and/or third CE devices, and/or implement a wireless power transfer to or from one or both of the first and third CE devices. Power transfer and/or communications may be unidirectional or bidirectional depending on an intended operation.

[0043] In some implementations, antenna system 116 allows one or more of CE devices 130-133 to operate without any externally accessible communications ports and/or power cords. Instead, for example, second CE device 131 may receive all operation power from one or both of first CE device 130 and/or third CE device 132. Similarly, the antenna system allows second CE device 131 to externally communicate with one or more other CE devices without the need for cable or fiber optic communications. For example, second CE device 131 may be a Blu-ray player operatively coupled with third CE device 132 (e.g., a television) to wirelessly communicate the multimedia content from a Blu-ray disc to the television for playback without the need for cable connections or external ports. Similarly, second CE device 131 may receive power to operate from the first and/or third CE devices. As such, in some implementations, the CE device can be designed and assembled without any external ports or connectors, and one or more antenna systems can be incorporated that allow the CE device to acquire power and communicate with one or more other CE devices. In some embodiments, CE devices and/or one or more communications antennas of one or more antenna systems in a CE device can operate without externally accessible communication ports, and in some instances, all communications with the consumer electronic device in which the antenna system is mounted are through the one or more communications antennas of one or more antenna systems.

[0044] Some embodiments are configured to define and/or control the cooperation between the multiple CE devices and/or establish a near field wireless system or network. Further, some embodiments configure antenna systems 116 to establish the communication between CE devices and/or dictate which CE device communicates with which other CE device. In some implementations, the cooperation of the CE devices defines a configuration of a near field wireless network of multiple CE devices capable of wirelessly transferring electrical power and/or wirelessly communicating between the CE devices.

[0045] FIG. 4 shows a simplified flow diagram of an exemplary method 410 of configuring a near field wireless

network of multiple CE devices, in accordance with some embodiments. Method 410 may be performed by processing logic that may comprise hardware (e.g., decision-making logic, dedicated logic, programmable logic, Application Specific Integrated Circuit (ASIC), and microcode), software (such as software run on a general-purpose computer system or a dedicated machine), or a combination of both. In one example embodiment, the processing logic refers to a group owner, controller 318, a processor of a CE device, a computing device, or a server. Notably, below recited steps of method 410 may be implemented in an order different than described and shown in the figure. Moreover, method 410 may have additional steps not shown herein, but which can be evident for those skilled in the art from the present disclosure. Method 410 may also have fewer steps than outlined below and shown in FIG. 4.

[0046] In step 412, a plurality of near field wireless antenna systems 116 are detected and/or identified and can be communicatively cooperated. For example, two or more cooperating antenna systems can be detected, and in many instances three or more antenna systems are detected. As described above and further below, each of the plurality of antenna systems 116 comprises one or more power transfer antennas and/or one or more communications antennas for data transfer. The power transfer antenna is configured to enable wireless electrical power transfer between the power transfer antenna and at least one other power transfer antenna of another one of the plurality of antenna systems. Additionally, some implementations are configured to use directional wireless power transfer to operate at larger distances.

[0047] Further, each of the one or more communications antennas is configured to enable wirelessly transmitting and receiving data communications with at least one further communications antenna. The further communications antenna can be one of the plurality of the antenna system or may include other antennas that are not considered part of the antenna system, such as an FM antenna, a GPS receiver, a Wi-Fi antennae, or antennas for communicating with cell phone towers.

[0048] Furthermore, there can be different versions of the antenna system where the different versions have at least one additional antenna that the antenna system described above does not have to facilitate communications, but the two antenna versions could communicate with the rest of the antennas even through the at least one additional antenna does not have a corresponding antenna to communicate with.

[0049] In some example implementations, there can be multiple versions of the antennae systems where a later version is backwards compatible with earlier versions and is wirelessly communicating with at least one of the earlier versions. In some of those implementations, the later versions can have or more additional antennas in its antenna systems and may even have other additional capabilities. In another implementation, a later version can include only a subset of the antennas in its antennae system and is built to be backwards compatible such that it operates with an earlier version.

[0050] The distances over which the wireless communication can be achieved is typically consistent with distances used for wireless electrical power transfer through the power transfer antenna. In some embodiments, one or more of the communications antennas are low power communications